Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

A New Shearing Interferometer for Cylindrical Wire Array Experiments[1] S. PIKUZ, T. SCHELKOVENKO, P. SCHRAFEL, B. KUSSE, Cornell University — In standard shearing interferometry, part of a single probing beam passes through a perturbing medium and is then split into two beams. A linear shift results in an overlap, interference and a fringe pattern yielding the perturbing medium density profile. The probing beam needs to be larger than the perturbing medium so that part of it passes through a well separated, low density region. During early time axial views of imploding cylindrical wire arrays the low and high density regions are not well separated. The low density regions lie in between the high density regions that are near the initial wire positions. In addition, the probing beam diameter is comparable to the array diameter. In this case a linear translation will not work but the overlap can be accomplished by an azimuthal rotation of one beam with respect to the other. Such an azimuthal shearing interferometer has been bench tested with encouraging results. A refined version has been set up on the COBRA experiment to give time resolved, radial and azimuthal electron density profiles during early time, cylindrical wire array implosions.

[1]Supported by NNSA SSAA DOE Cooperative Agreement DE-FC03-02NA00057

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Date submitted: 14 Sep 2007 Electronic form version 1.4